FIG.1

FUNCTION BLOCK DIAGRAM SHOWING A PLL FREQUENCY SYNTHESIZER ACCORDING TO FIRST EMBODIMENT
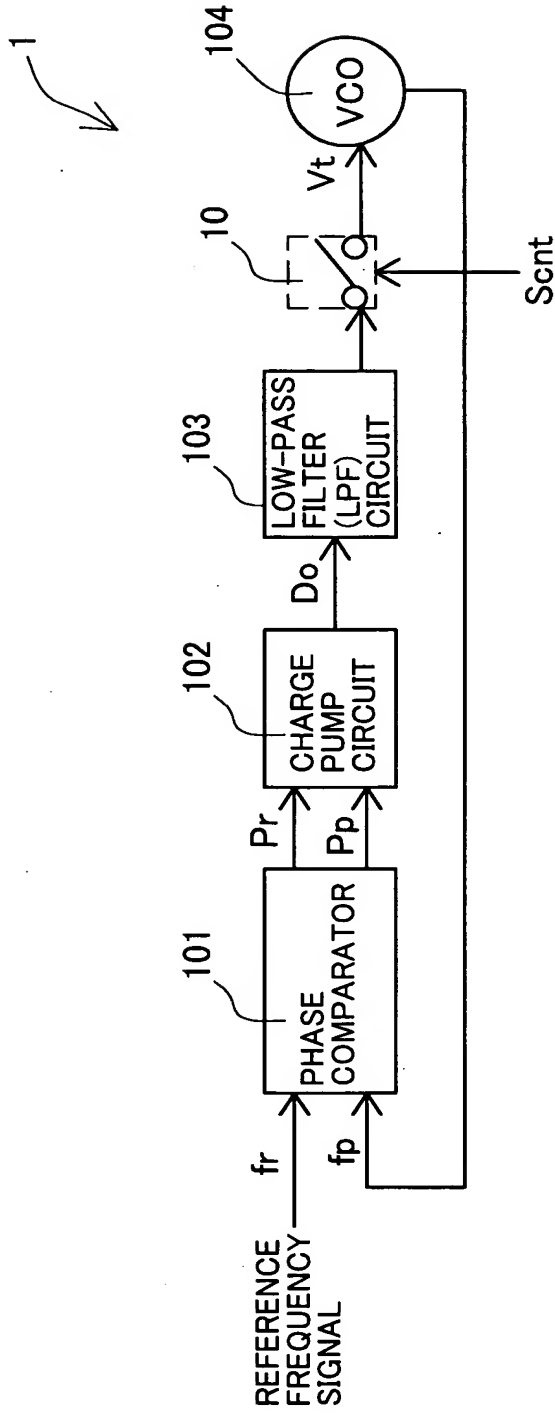
FIG.2

WAVEFORM DIAGRAM ILLUSTRATING OPERATING WAVEFORMS OF THE PLL FREQUENCY SYNTHESIZER ACCORDING TO FIRST EMBODIMENT
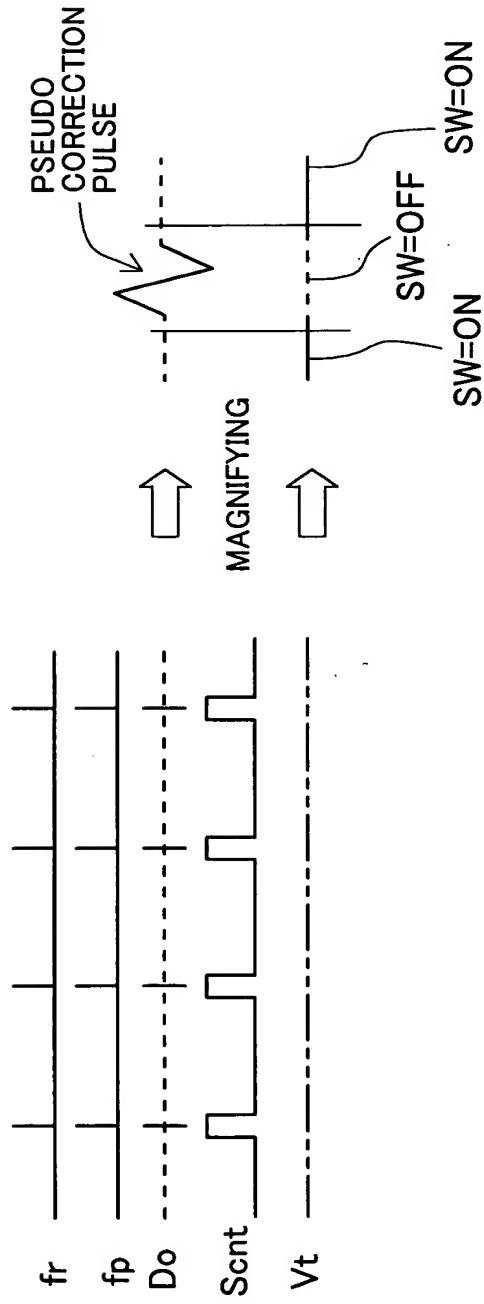
3

FIG.3

FUNCTION BLOCK DIAGRAM DEPICTING A SPECIFIC EXAMPLE OF THE
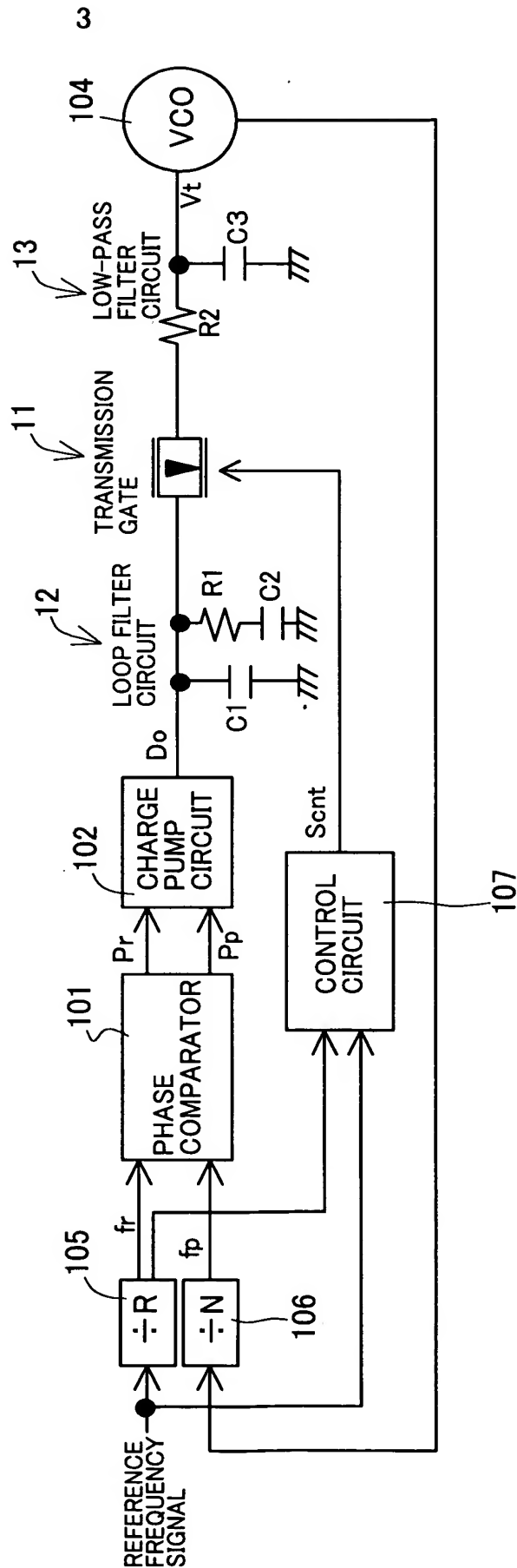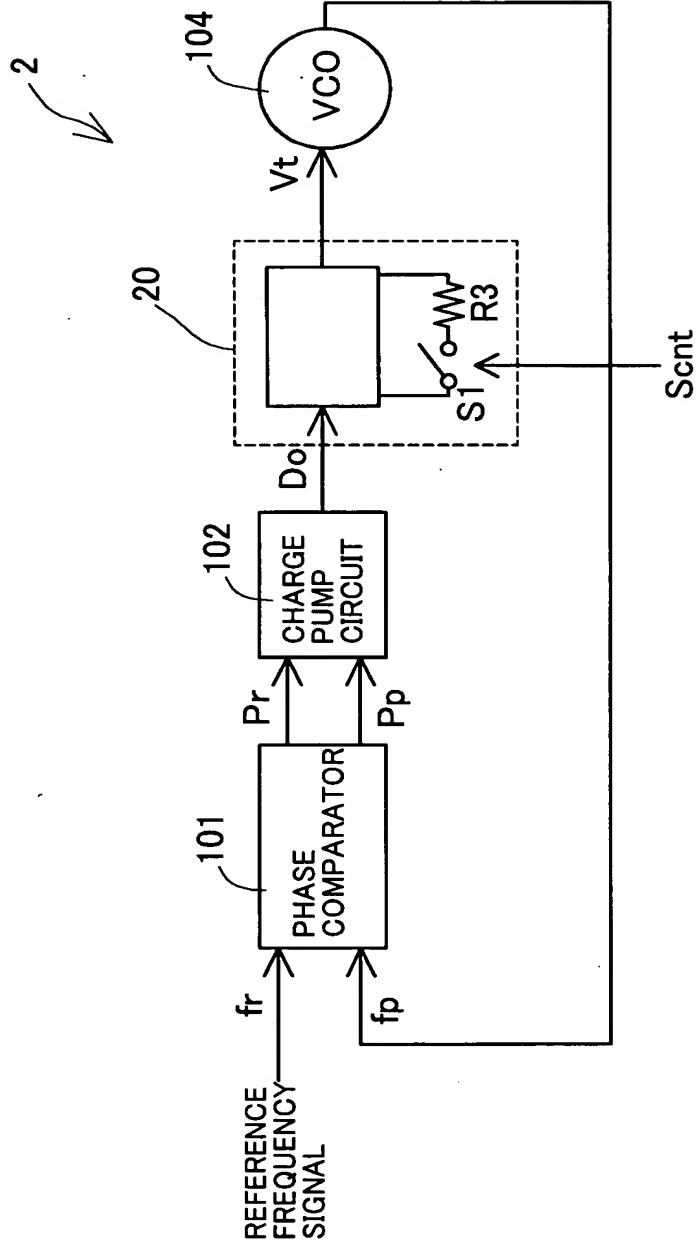PLL FREQUENCY SYNTHESIZER ACCORDING TO FIRST EMBODIMENT

FIG.4

FUNCTION BLOCK DIAGRAM SHOWING A PLL FREQUENCY
SYNTHESIZER ACCORDING TO SECOND EMBODIMENT

CIRCUIT DIAGRAM ILLUSTRATING SPECIFIC EXAMPLES OF
A LOW-PASS FILTER (LPF) CIRCUIT EMPLOYED IN SECOND
EMBODIMENT

FIG.5A
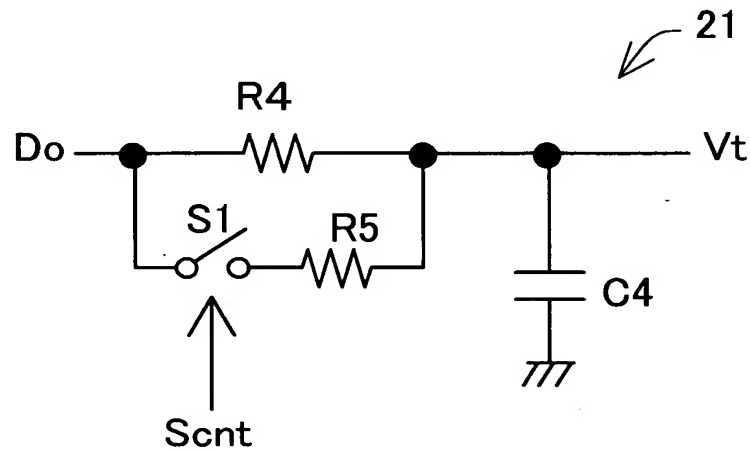
TYPE WHEREIN PARALLEL PATHS ARE SELECTED
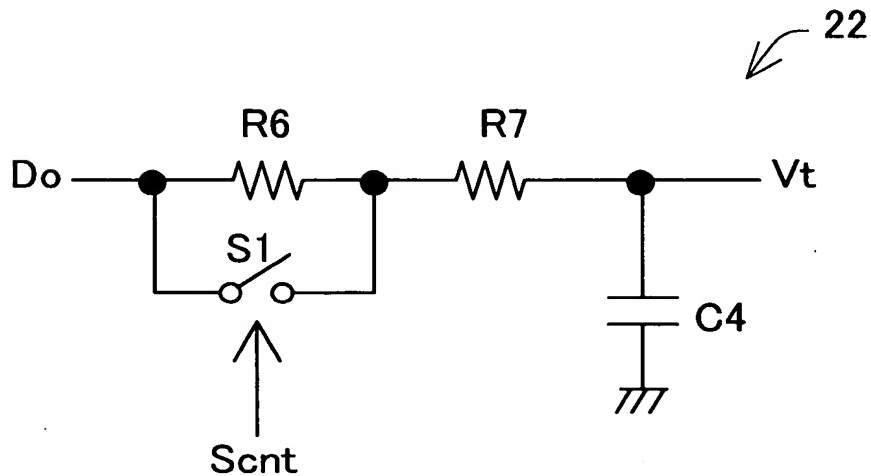
FIG.5B

TYPE WHEREIN SERIAL PATHS ARE SELECTED

FIG.6

FUNCTION BLOCK DIAGRAM DEPICTING A PLL FREQUENCY
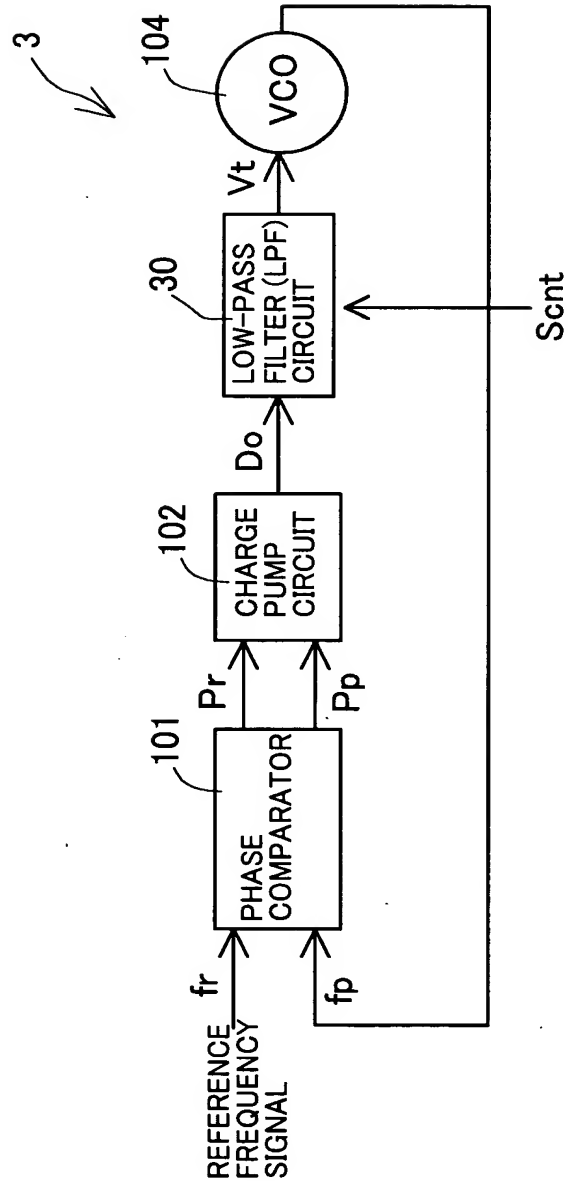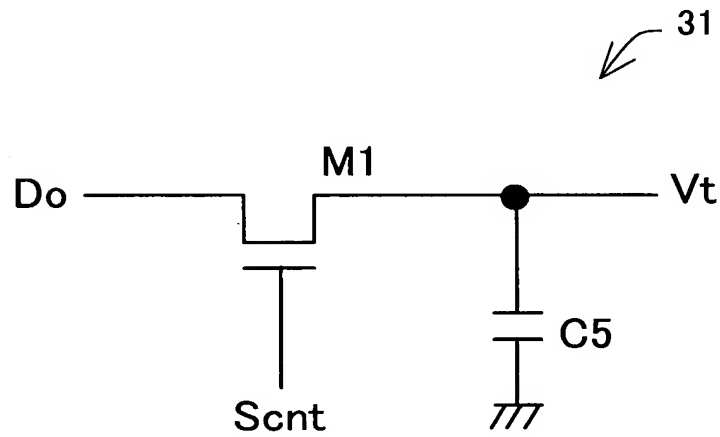SYNTHESIZER ACCORDING TO THIRD EMBODIMENT

FIG.7

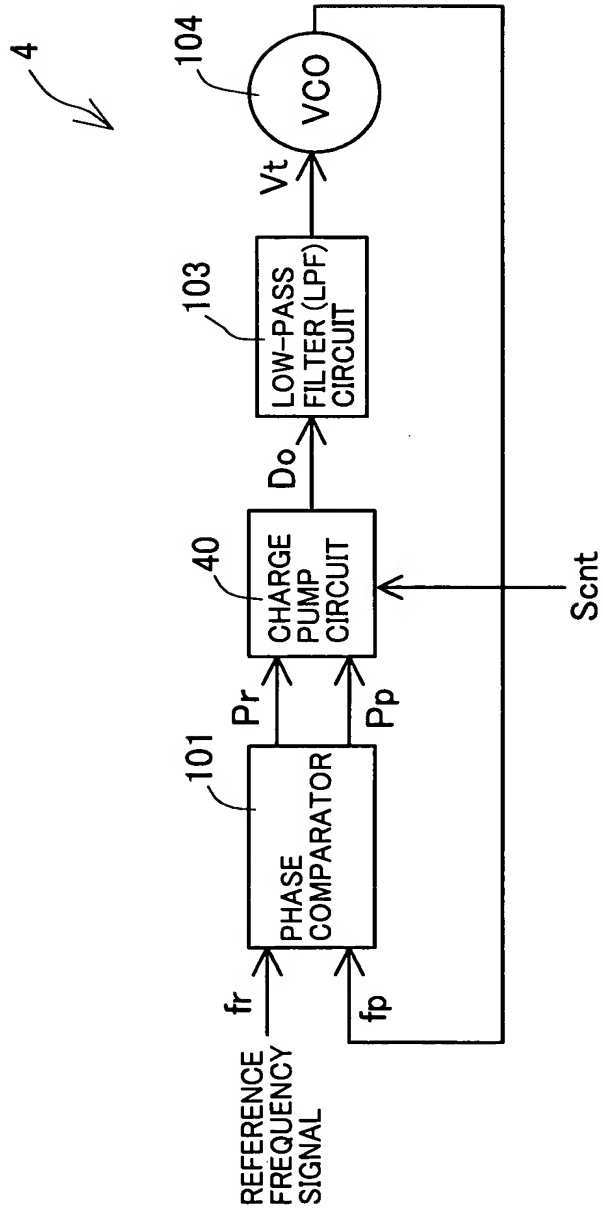CIRCUIT DIAGRAM SHOWING A SPECIFIC EXAMPLE OF
A LOW-PASS FILTER (LPF) CIRCUIT EMPLOYED IN
THIRD EMBODIMENT

31

Do ———� M1 ●——— Vt

Scnt

C5

777

FIG.8

FUNCTION BLOCK DIAGRAM ILLUSTRATING A PLL FREQUENCY
SYNTHESIZER ACCORDING TO FOURTH EMBODIMENT

CIRCUIT DIAGRAM SHOWING SPECIFIC EXAMPLES OF A CHARGE PUMP CIRCUIT EMPLOYED IN FOURTH EMBODIMENT

FIG.9A

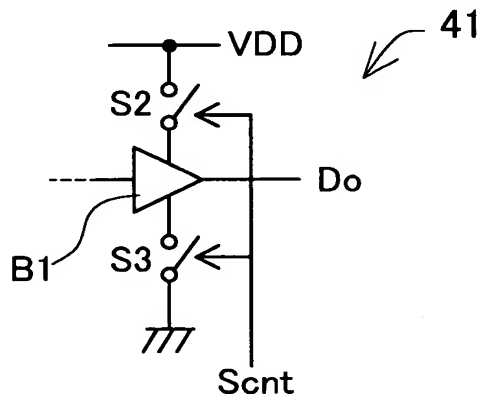TYPE THAT IT OPENS OR CLOSES OUTPUT PATHS

FIG.9B

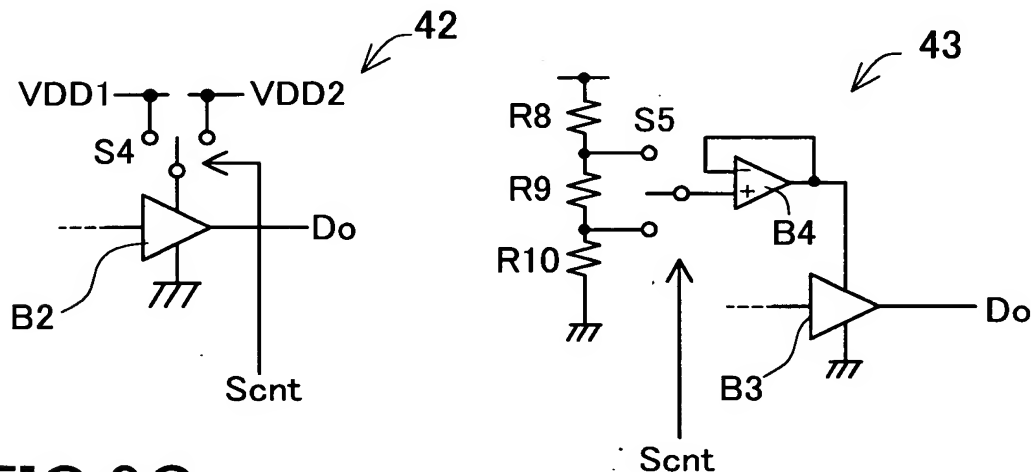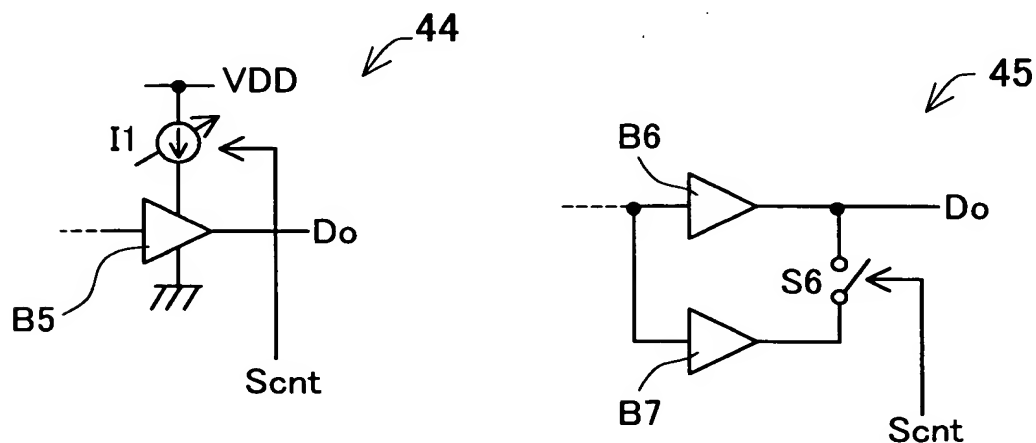TYPE WHEREIN SOURCE VOLTAGES ARE SWITCHED

FIG.9C

TYPE WHEREIN DRIVING CAPACITIES ARE SWITCHED

CIRCUIT DIAGRAM DEPICTING A SPECIFIC EXAMPLE OF
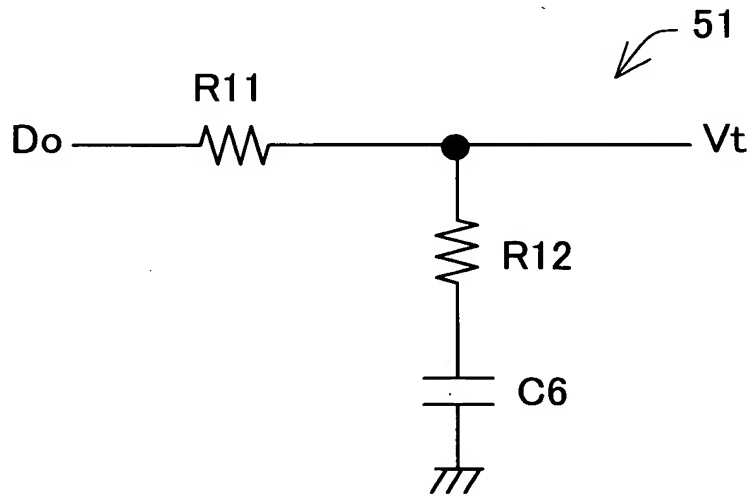A LOW-PASS FILTER (LPF) CIRCUIT

FIG.10A

VOLTAGE-DRIVEN TYPE
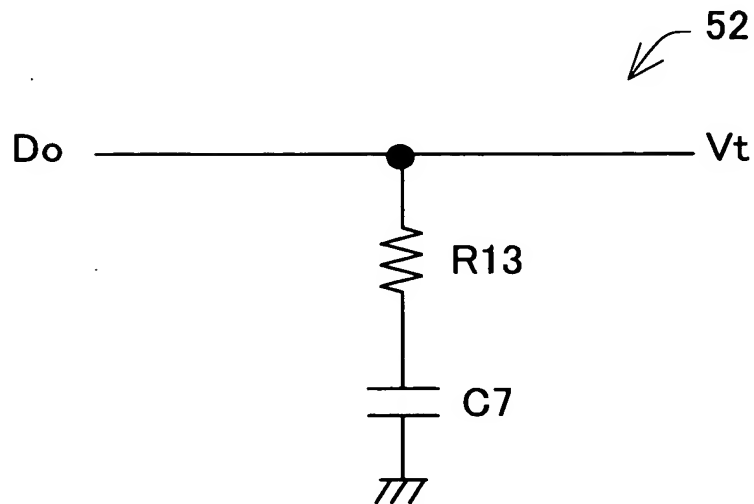

FIG.10B

CURRENT-DRIVEN TYPE

FIG.11 PRIOR ART

FUNCTION BLOCK DIAGRAM SHOWING A PLL FREQUENCY
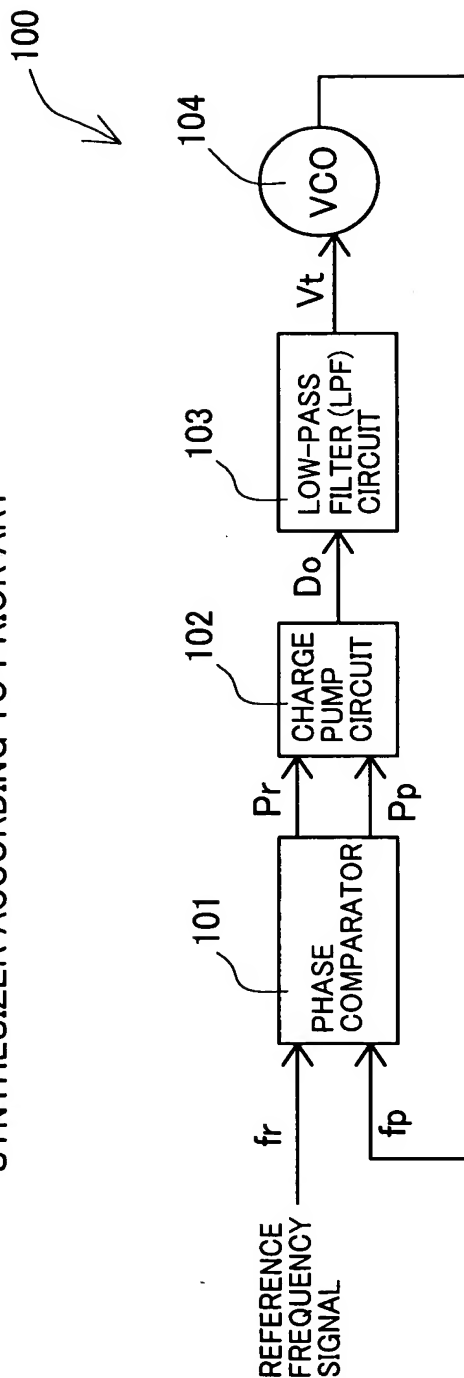SYNTHESIZER ACCORDING TO PRIOR ART

FIG.12 PRIOR ART

WAVEFORM DIAGRAM ILLUSTRATING OPERATING WAVEFORMS OF THE
PLL FREQUENCY SYNTHESIZER ACCORDING TO PRIOR ART

fr

fp

Do

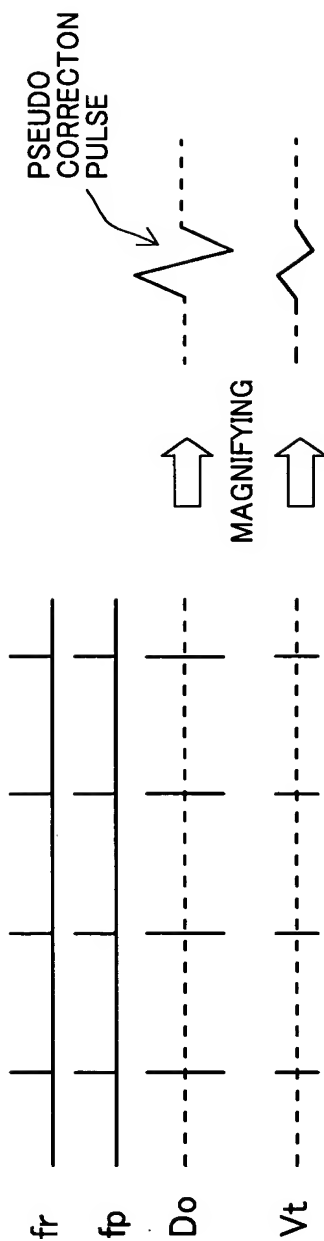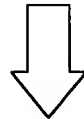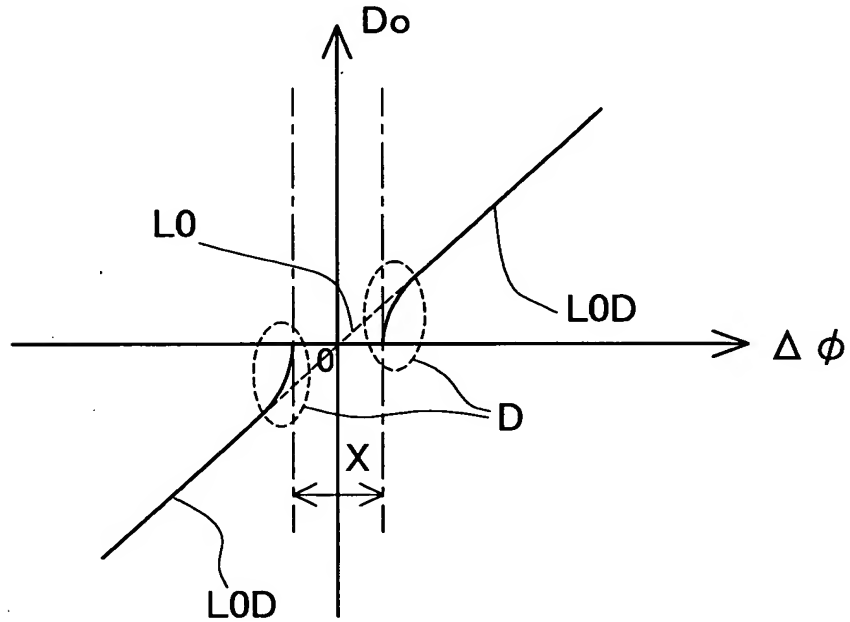Vt

PSEUDO
CORRECTON
PULSE

MAGNIFYING

FIG.13

CHARACTERISTIC DIAGRAM SHOWING INPUT/OUTPUT
CHARACTERISTICS OF A CHARGE PUMP CIRCUIT

SOLVING THE DEAD
ZONAL REGION